Software Test

Lesson 8
Test Planning
v1.1

Uwe Gühl, Jittat Fakcharoenphol

Fall 2007/ 2008

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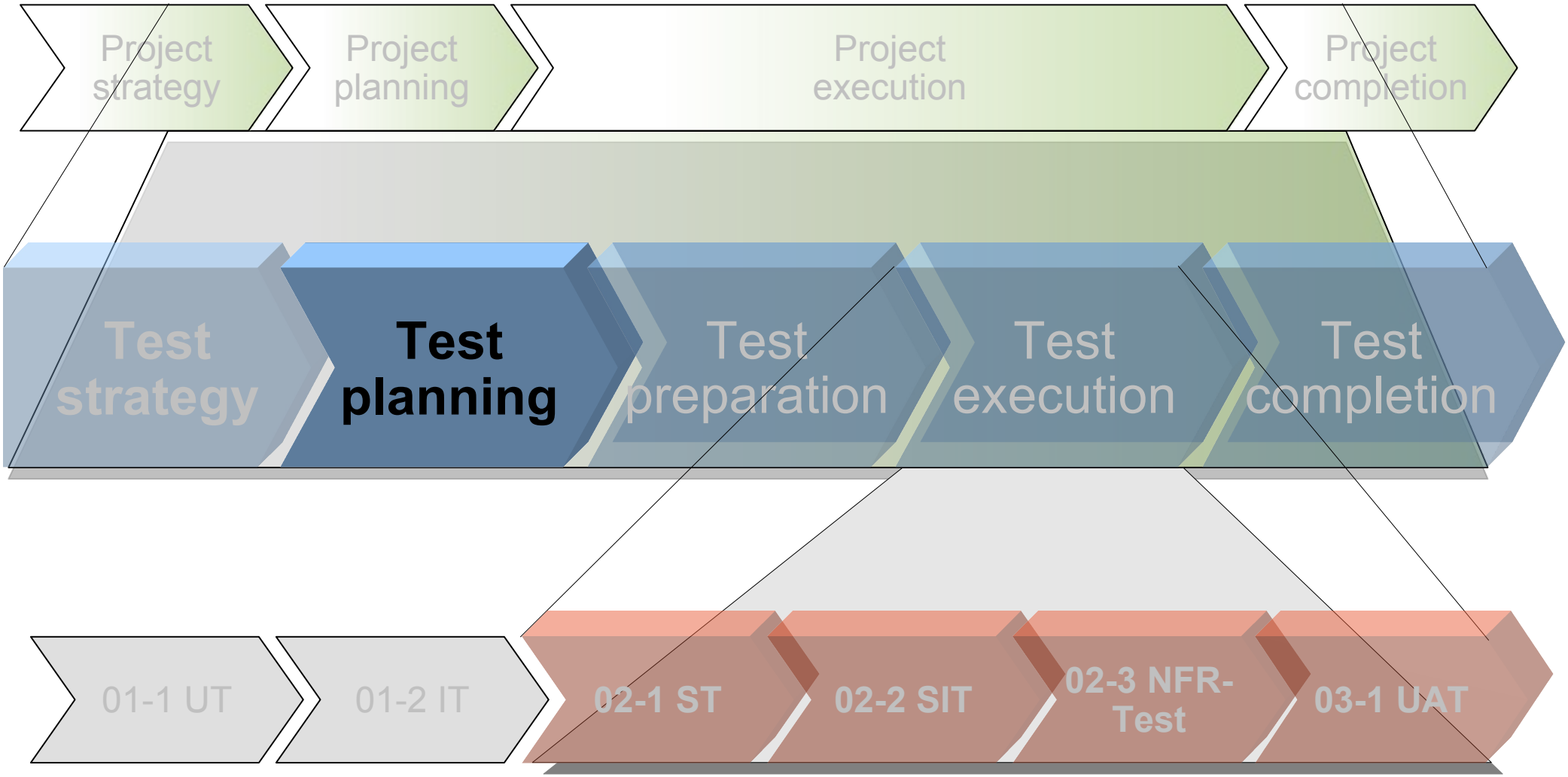
  - Discussion
  - Goal
  - Involved people
  - Scope

  - Test Planing Workshop

A sample testing cycle
Test Plan

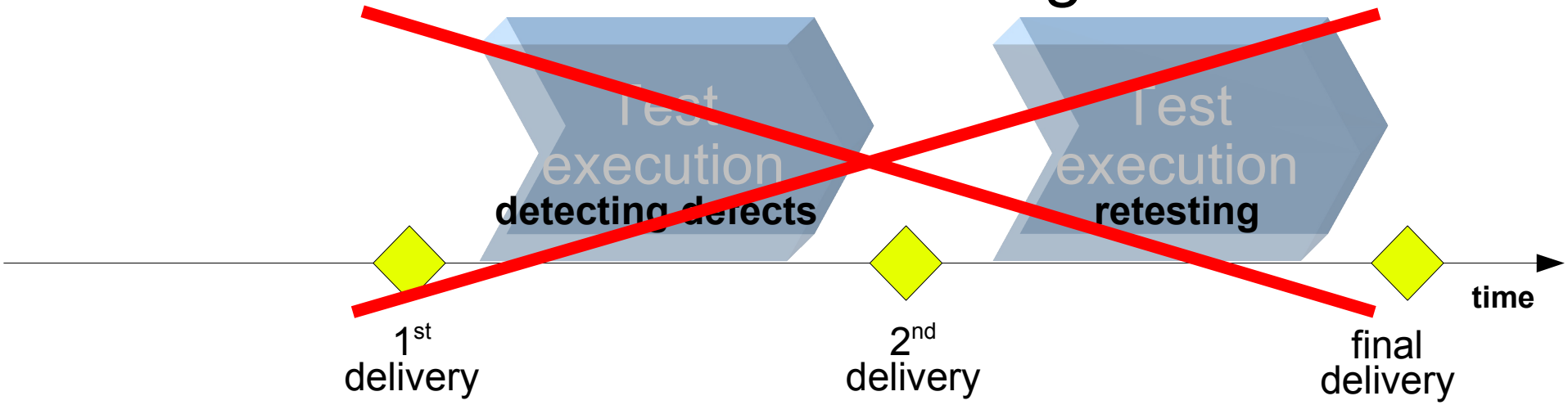


Test Planning Discussion

- How much effort to spend for Test Planning?
  - depending on contents of project
  - depending on proceeding in project
  - depending on test strategy

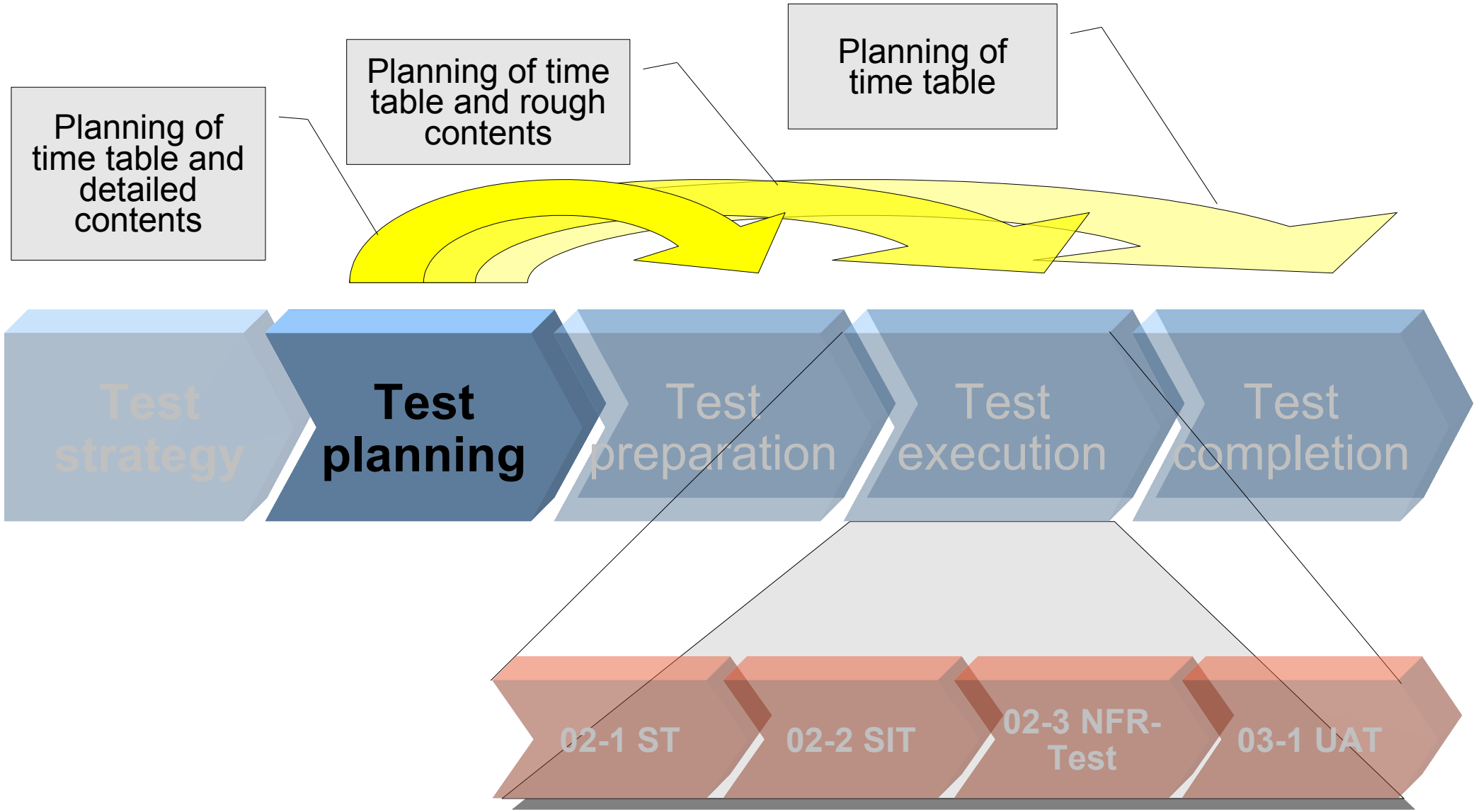
Test Planning Discussion

- What to consider for Test Planning?



  - **Doesn't work! 2 test cycles not enough – why?**
    - You test better, when you learn about the product
    - Not all bugs found in the first cycle will be fixed after the first cycle
    - Not all bugs will be found in the first cycle
    - Side effects not considered

Test Planning Discussion

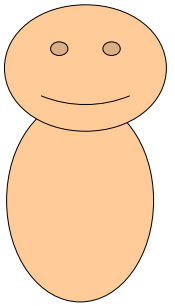


Test Planning
Goal

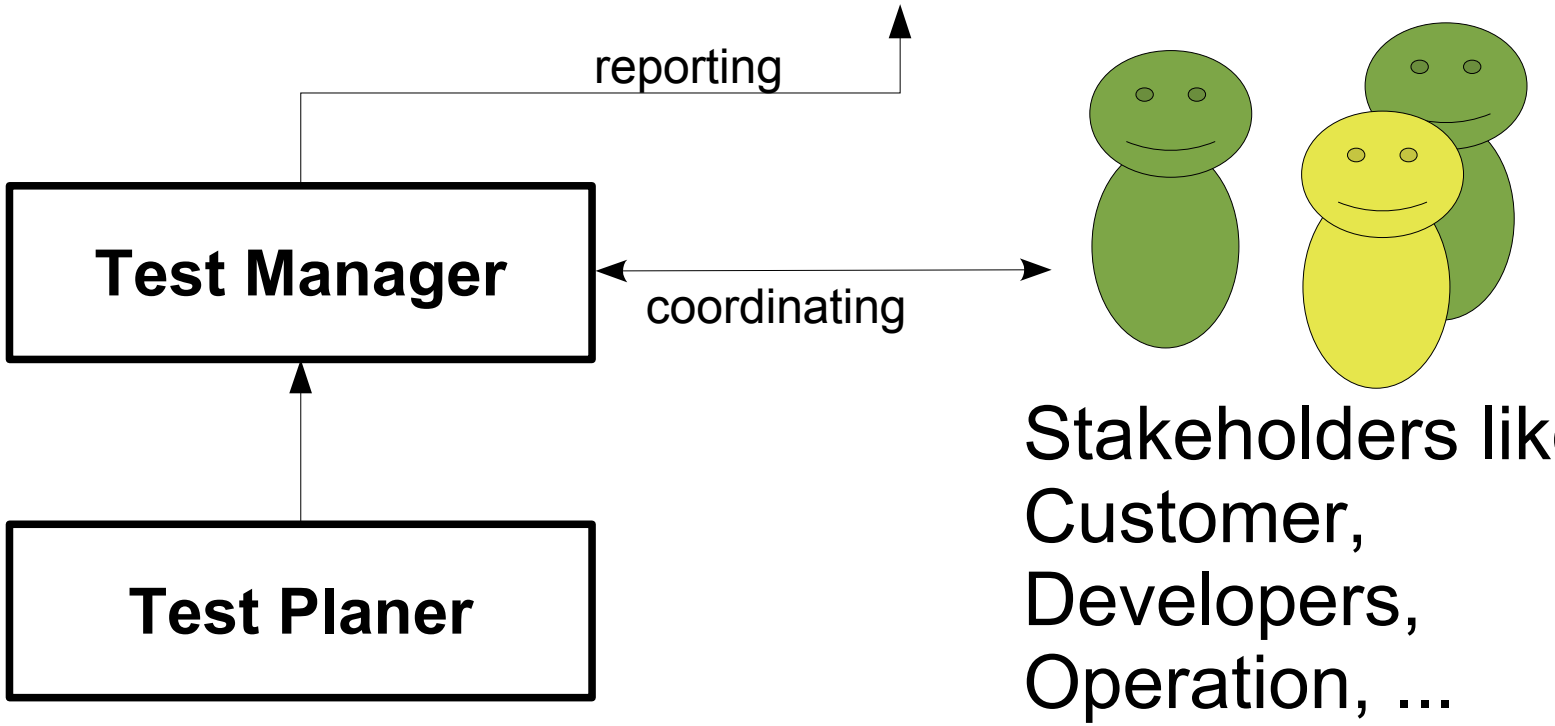
- Planning of
  - Test preparation (time table and detailed contents)
  - Test execution (time table and rough contents)
  - Test completion (time table)
- Result: Time Schedule and Resource Plan
  - Should include decision about tools
  - Coordination and decision about acceptance of the Test Plan
- Preparation of
  Training for Testers for Test Preparation

Test Planning People

- Involved people
  - Test Manager
  - Test Planer



Project Manager



Stakeholders like Customer, Developers, Operation, ...

Test Planning
Scope

- Time Schedule and Resource Plan
  - How do you eat an elephant?
    One bite at a time.
  - Identify tasks and allocate them to roles
  - Planing of Test Preparation in detail
    - Which goals?
    - Which tasks?
    - Which resources?
    - Which milestones?
  - Planing of Test Execution (roughly)
    - Milestones
  - Planing of Test Completion (very roughly)

Test Planning
Scope

- Concerning Test Tools: At least concerning the Test Management Tool a decision is needed
  - Definition of evaluation criteria
  - Research: Which tools are available?
  - Comparison of tools concerning evaluation criteria
  - Recommendation
  - Decision about tools

Test Planning Scope

- Preparation of the training of the testers for Test Preparation
  - In the beginning of the Test Preparation Phase tester must be trained – Tester arrive and have to be instructed
  - Contents of the Training
    - Processes
    - Tools
    - Specification
    - Examples
    - Training on the Job - first common Test Cases
    - Quality assurance

Software Test

Test Planning Workshop

Preface

- We will develop a (simple) example test plan – based on assumptions
- Reference is
  KU-Bangkok_SW-Test_08_2007.08_Spreadsheet-Exercise_VERSION*
- Proceeding
  - You create mixed groups of 5 people
  - One of you should take a spreadsheet to document the working results
  - We will proceed in 6 steps
  - After every Step we will compare and summarize

VERSION on 21st Dec. is 1.0

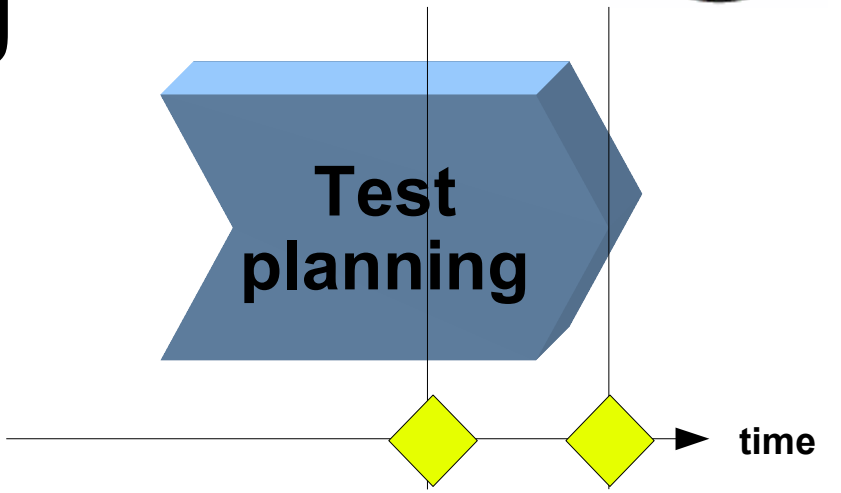
Preface

- Reference: KasetClock_Spec1.4.doc, Use Case.doc
- Topic: KasetClock
- Milestones:
  - December, 21, 2007
  - January, 18, 2008
- Specification:
  - 21 Use Cases
  - 4 Business Scenarios (Business Use Cases)

Test Planning Proceeding

At a time for

- Test Preparation
- Test Execution
- (Test Completion)



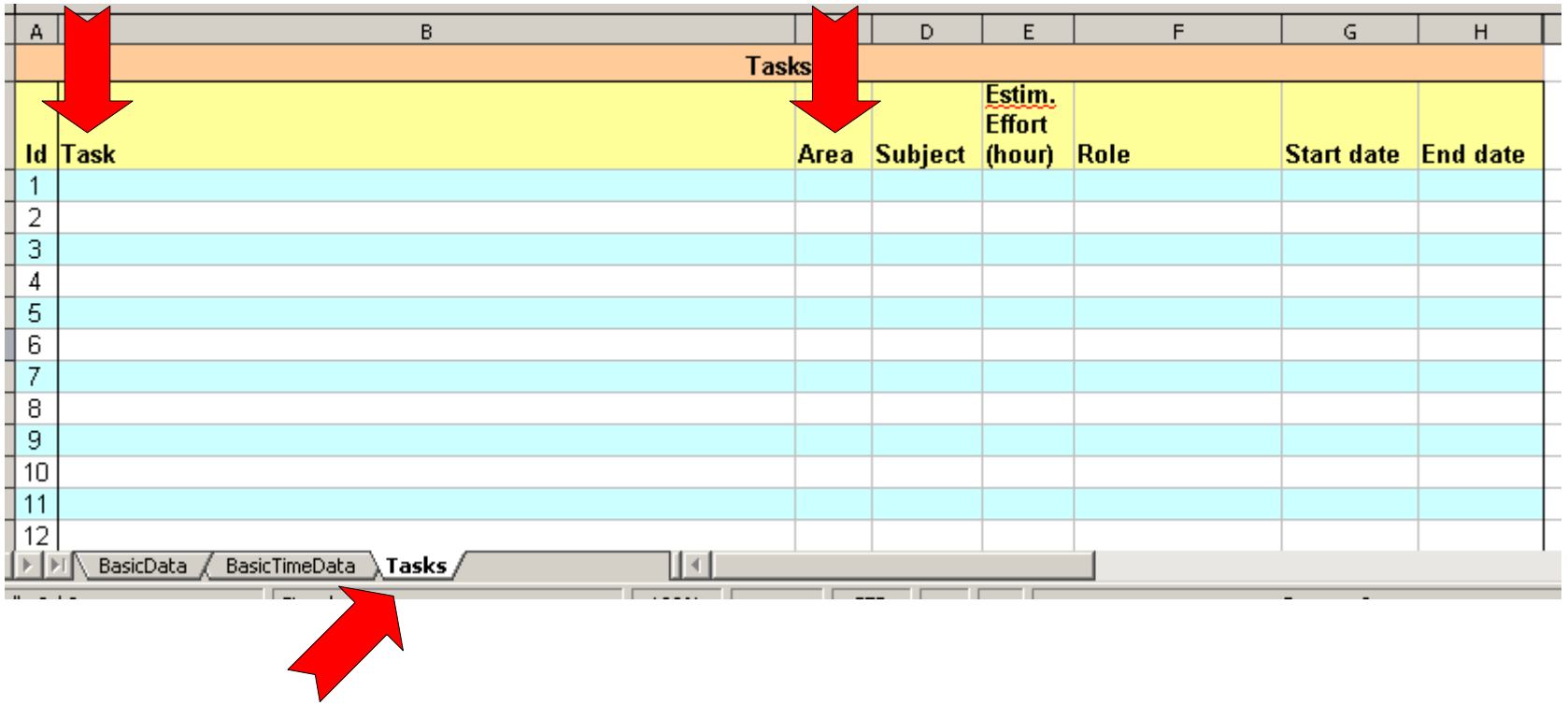
Iterative approach

1. Collect tasks
2. Cluster tasks
3. Estimate effort
4. Allocate resources
5. Plan milestones with expected results
6. Plan sequences of tasks

⇨ **Agreement**

Test Planning Proceeding

1. Collect tasks



	A	B	D	E	F	G	H
		Tasks					
	Id	Task	Area	Subject	Estim. Effort (hour)	Role	Start date	End date
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

BasicData | BasicTimeData | Tasks

Test Planning Proceeding

1. Collect tasks

Collect Tasks of the areas, where Area is one of

- (Test) Prep(aration)
- (Test) Exe(cution)
  - **Exe 02-1** (Functional) **S**(ystem) **T**(est)
  - **Exe 02-2 S**(ystem) **I**(ntegration) **T**(est)
  - **Exe 02-3 N**(on-) **F**(unctional) **R**(equirements)
  - **Exe 03-1 U**(ser) **A**(cceptance) **T**(est)
- (Test) Compl(ition)

Test Planning Proceeding

1. a) Tasks in Test Preparation, for example
   - Training
   - Test Case creation
   - Test Scenario creation
   - Test Data management
   - Review (with all participants)
   - Rework
   - Preparation of test environment
   - Learning and reviewing specification
   - Change management
   - Workshops
   - Regular communication
   - Test Management

Test Planning Proceeding

1. b) Tasks in Test Execution, for example
   - Training
   - Test Case execution
   - Test Case overwork
   - Test Scenario execution
   - Test Data management
   - Reporting
   - Software installation and operation
   - Defect management
   - Feedback specification
   - Change management
   - Workshops
   - Regular communication
   - Test Management

Test Planning Proceeding

1. b) Tasks in Test Execution

- Differ between different stages
  - System Test
  - System Integration Test
  - NFR Test
  - User Acceptance Test

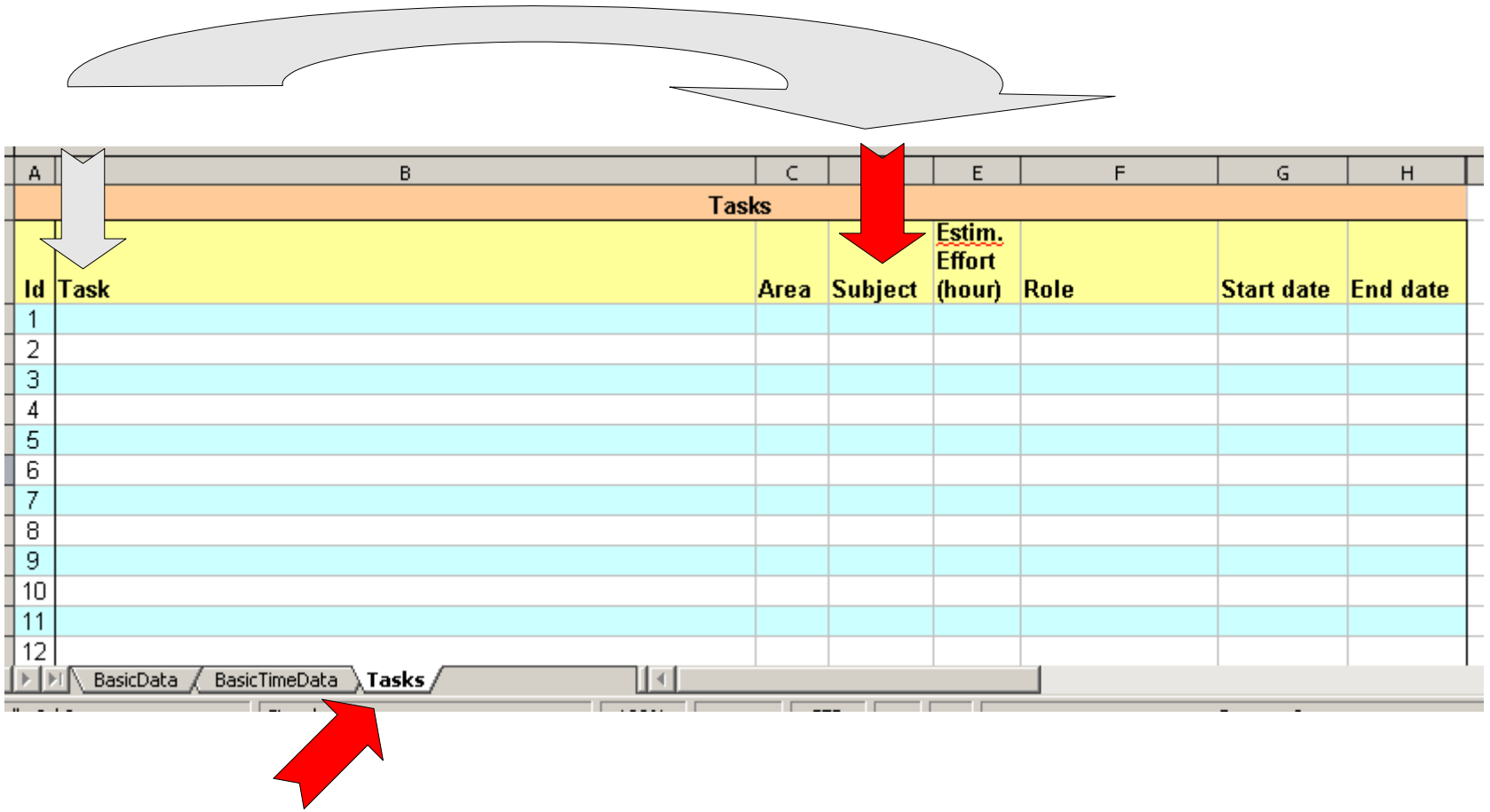
Test Planning Proceeding

1. c) Tasks in Test Completion

- Final documentation
- Final workshop

Test Planning Proceeding

2. Cluster tasks



Test Planning Proceeding

2. Cluster tasks

- In clustering tasks you decide, if tasks belong together and have a same subject.
- Find for this subjects corresponding fitting title.
- Enter the fitting title for each task in the Subject column

Test Planning Proceeding

2. Cluster tasks, for example

Task	Subject

...

Workshops	Communication
Regular communication	Communication

... and so on

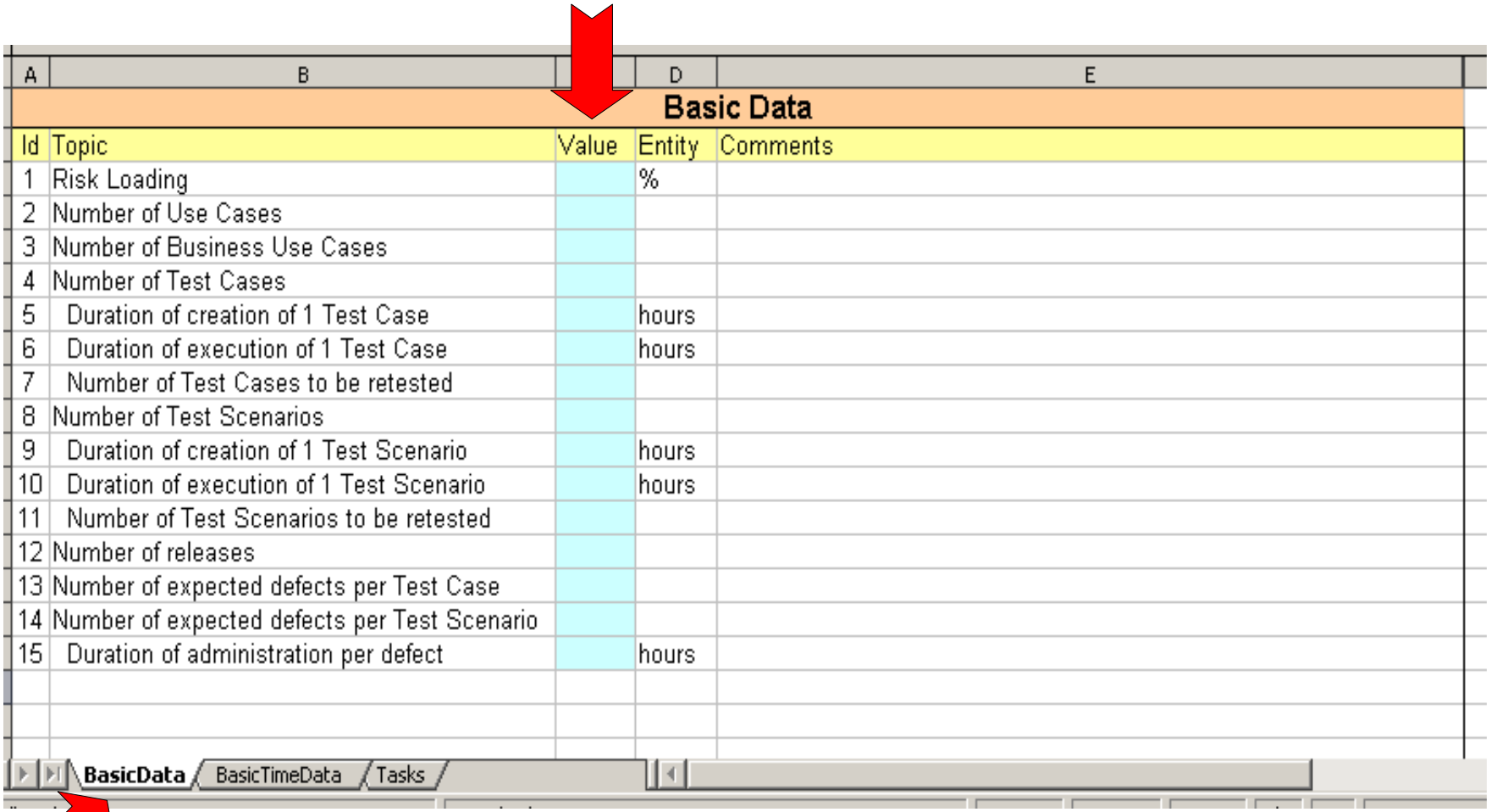
Test Planning Proceeding

3. Estimate Effort for
   - 3.1 Basic data
   - 3.2 Tasks

- Always try to use experience out of similar and / or older projects
- Estim(ated) effort (in hours) could either be calculated out of BasicData combined with BasicTimeData or guessed

Test Planning Proceeding

3.1 Estimate Effort – Basic data



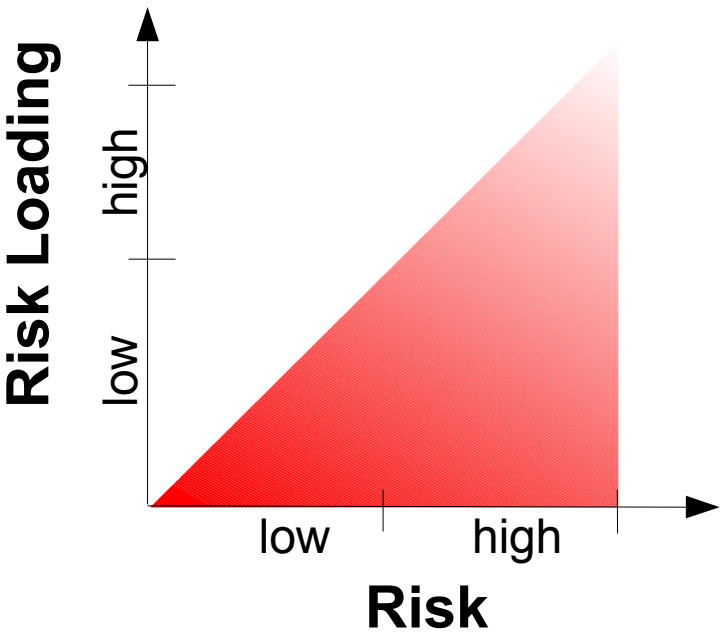
	A	B	C	D	E
	Basic Data				
1	Id	Topic	Value	Entity	Comments
2	1	Risk Loading		%	
3	2	Number of Use Cases			
4	3	Number of Business Use Cases			
5	4	Number of Test Cases			
6	5	Duration of creation of 1 Test Case		hours	
7	6	Duration of execution of 1 Test Case		hours	
8	7	Number of Test Cases to be retested			
9	8	Number of Test Scenarios			
10	9	Duration of creation of 1 Test Scenario		hours	
11	10	Duration of execution of 1 Test Scenario		hours	
12	11	Number of Test Scenarios to be retested			
13	12	Number of releases			
14	13	Number of expected defects per Test Case			
15	14	Number of expected defects per Test Scenario			
16	15	Duration of administration per defect		hours	

BasicData | BasicTimeData | Tasks

Test Planning Proceeding

3.1 Estimate Effort – Basic data

- Risk Loading in Percentage
  - effort to be added
  - depending on how certain you are in guessing, the less or the higher should be the percentage to be added



  - You could add additional risk loading values, e. g. to differ between risk loading for
    - Test preparation tasks and
    - Test execution tasks

Test Planning Proceeding

3.1 Estimate Effort – Basic data

- Number of Use Cases
  - Out of the functional specification
  - Main basic for Test Cases
  - Attention: If the quality of the specification is not sufficient, maybe you should consider more Use Cases to be handed later
- Number of and Business Use Cases
  - Out of business process specification
  - Main basic for Test Scenarios

Test Planning Proceeding

3.1 Estimate Effort – Basic data

- Number of Test Cases
  - should depend on Use Cases
  - Maybe additional Test Cases because of additional specification documents, additional ideas, late changes, ...
  - Consider to add special NFR Test Cases, if helpful

Test Planning Proceeding

3.1 Estimate Effort – Basic data

- Duration of creation of 1 Test Case, consider
  - complexity of project topic
  - planned size of Test Case
  - effort for learning, review, rework, overwork
- Duration of execution of 1 Test Case, consider
  - planned size and granularity of Test Case
  - expected quality of Test Case – easy to use / additional tasks
  - effort for documentation

Test Planning Proceeding

3.1 Estimate Effort – Basic data

- Number of Test Cases to be retested
  - Guess over testing cycle, depends on requested quality and test strategy
- Number of Test Scenarios, Duration ...
  - same considerations as for Test Cases, but on business process level and depending on Business Use Cases
- Number of releases
  - influences time for defect fixing, retest effort

Test Planning Proceeding

3.1 Estimate Effort – Basic data

- Number of expected defects per Test Case
  - Depends on size of Test Case, quality of software (first release or fix?), experience, and so on
    - 0,1 – out of 10 Test Cases 1 defect is expected
    - 1 – 1 defect per Test Case (something like rule of thumb)
    - 2 – 2 defects per Test Case

Test Planning Proceeding

3.1 Estimate Effort – Basic data

- Number of expected defects per Test Scenario
  - Depends on size of Test Scenario, e. g. how many Test Cases are included in average, quality of software and quality of testing, experience in software development, interfaces, quality of simulators, quality of test environments, and so on
    - 1 – 1 defect per Test Scenario
    - 10 – 10 defects per Test Scenario (something like rule of thumb)

Test Planning Proceeding

3.1 Estimate Effort – Basic data

- Duration of administration per defect, consider
  - Administration for informing about bug (description, assigning, screenshots, ...)
  - Clarification effort (communication, reconstruction, explanation)
  - Managing bug (status, reporting, fixed?, fixed and delivered?, retested – by whom?, closing fix, reassign)
  - Defect meetings – number of participants
  - Escalation meetings – number of participants

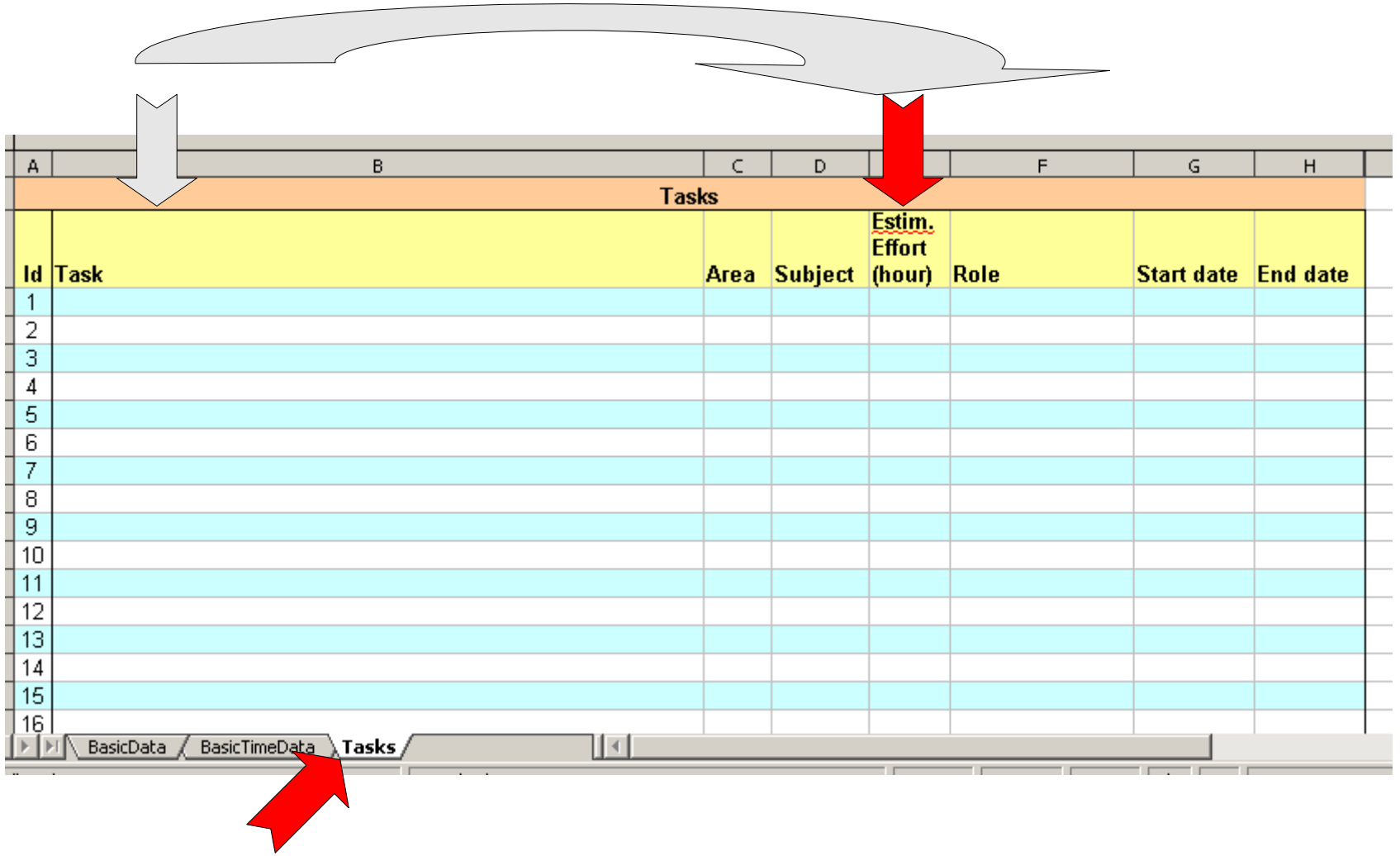
Test Planning Proceeding

3.1 Estimate Effort – Basic data

- ... more
  - More basic values are possible, depending on Test Project

Test Planning Proceeding

3.2 Estimate Effort – Tasks



	A	B	C	D		F	G	H
		Tasks						
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1								
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16								

BasicData | BasicTimeData | Tasks

Test Planning Proceeding

3.2 Estimate Effort – Tasks – General

- Estim(ated) effort (in hours) could
  - either be calculated out of BasicData combined with BasicTimeData or
  - Guessed
- Discuss concerning effort with people who will do the work
- If people are influenced, integrate them (e. g. developers concerning development circle)

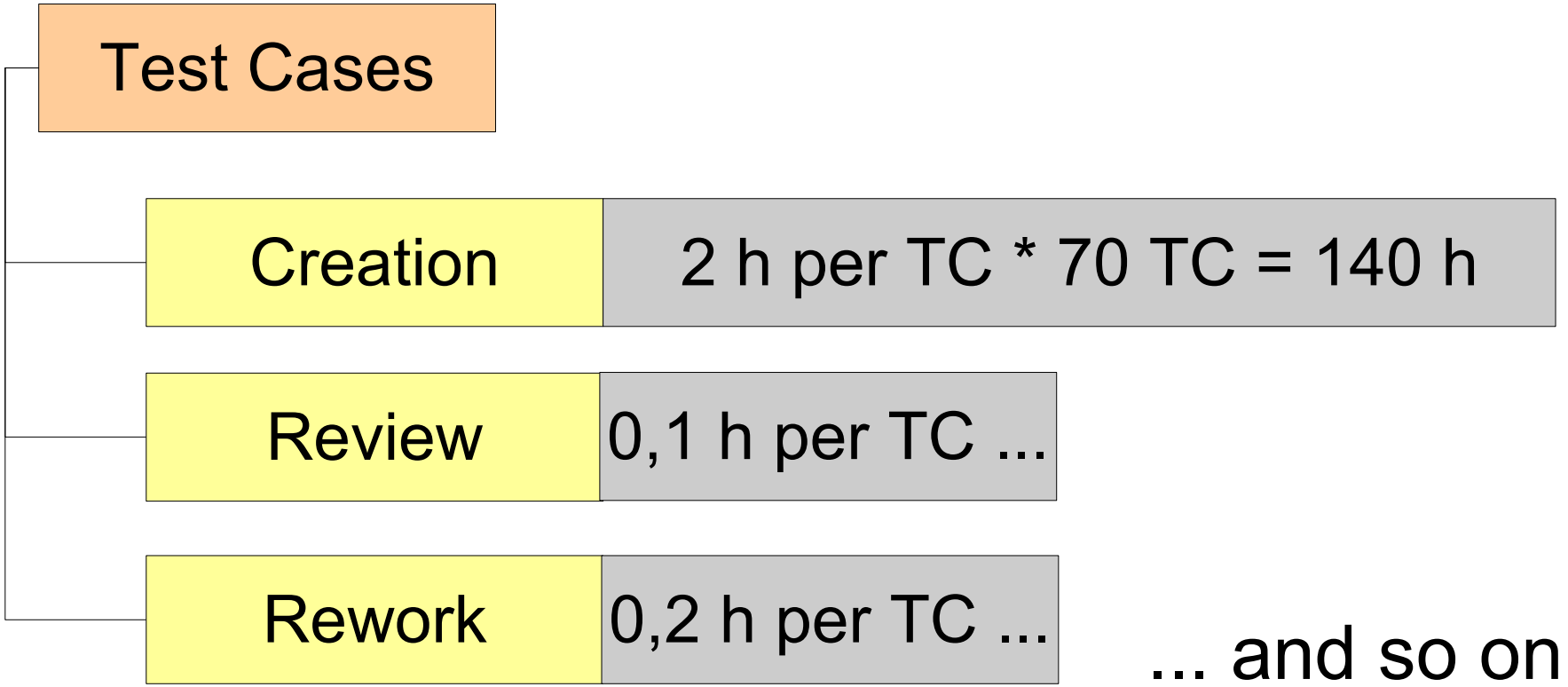
Test Planning Proceeding

3.2 Estimate Effort – Tasks – General

- Estimate the amount of time needed for each task
- Consider
  - experienced people? (test tools, expertise as tester, expertise in business area)
  - learning curve
  - risk loading
  - sickness, vacation, holidays, training effort

Test Planning Proceeding

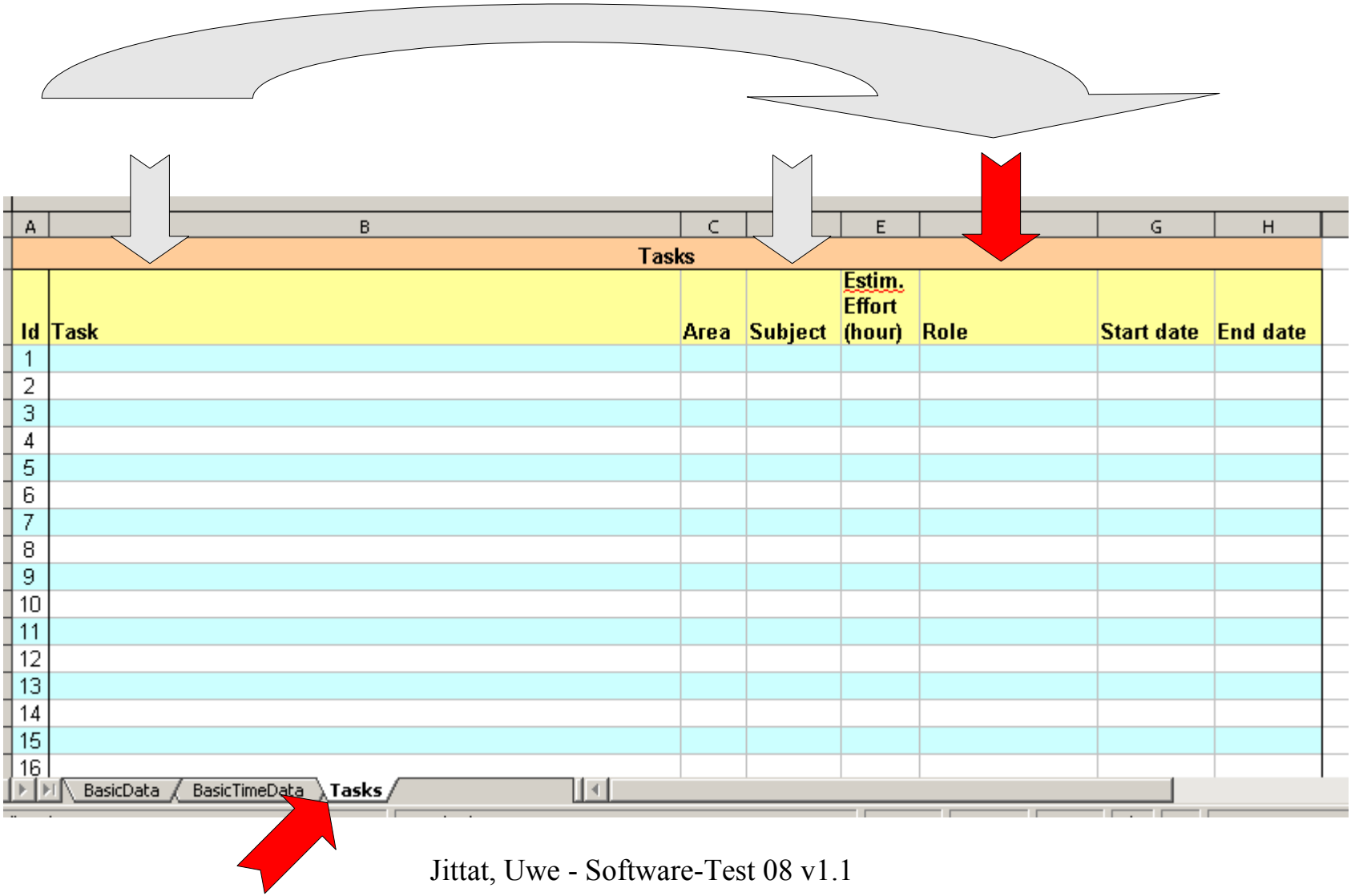
3.2 Estimate Effort – Tasks – Detail



... and so on

Test Planning Proceeding

4. Allocate resources



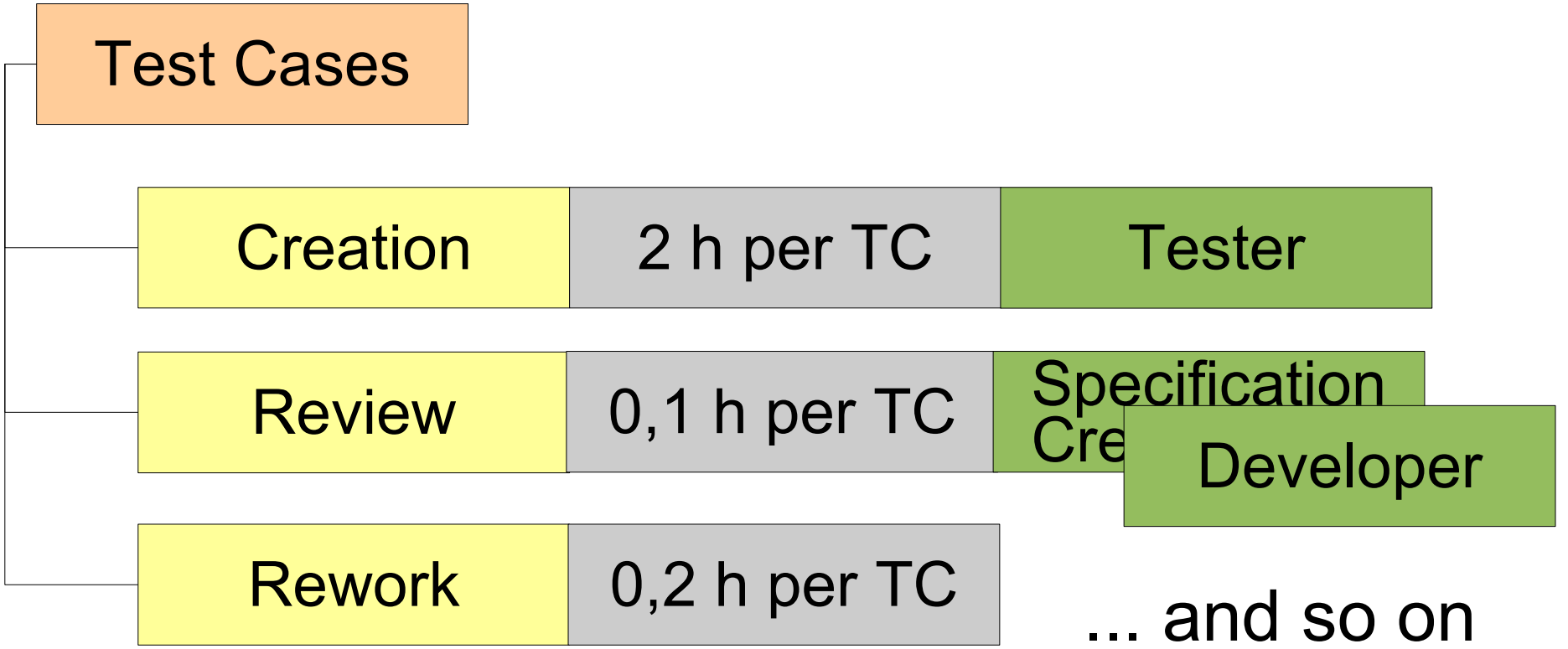
Test Planning Proceeding

4. Allocate resources

- Which roles do you know?
  (Study lecture slides concerning Test Basics)
- Roles to use should be already defined roles in the test project
- Mapping Tasks to Roles
- This could be basics for hiring the right people

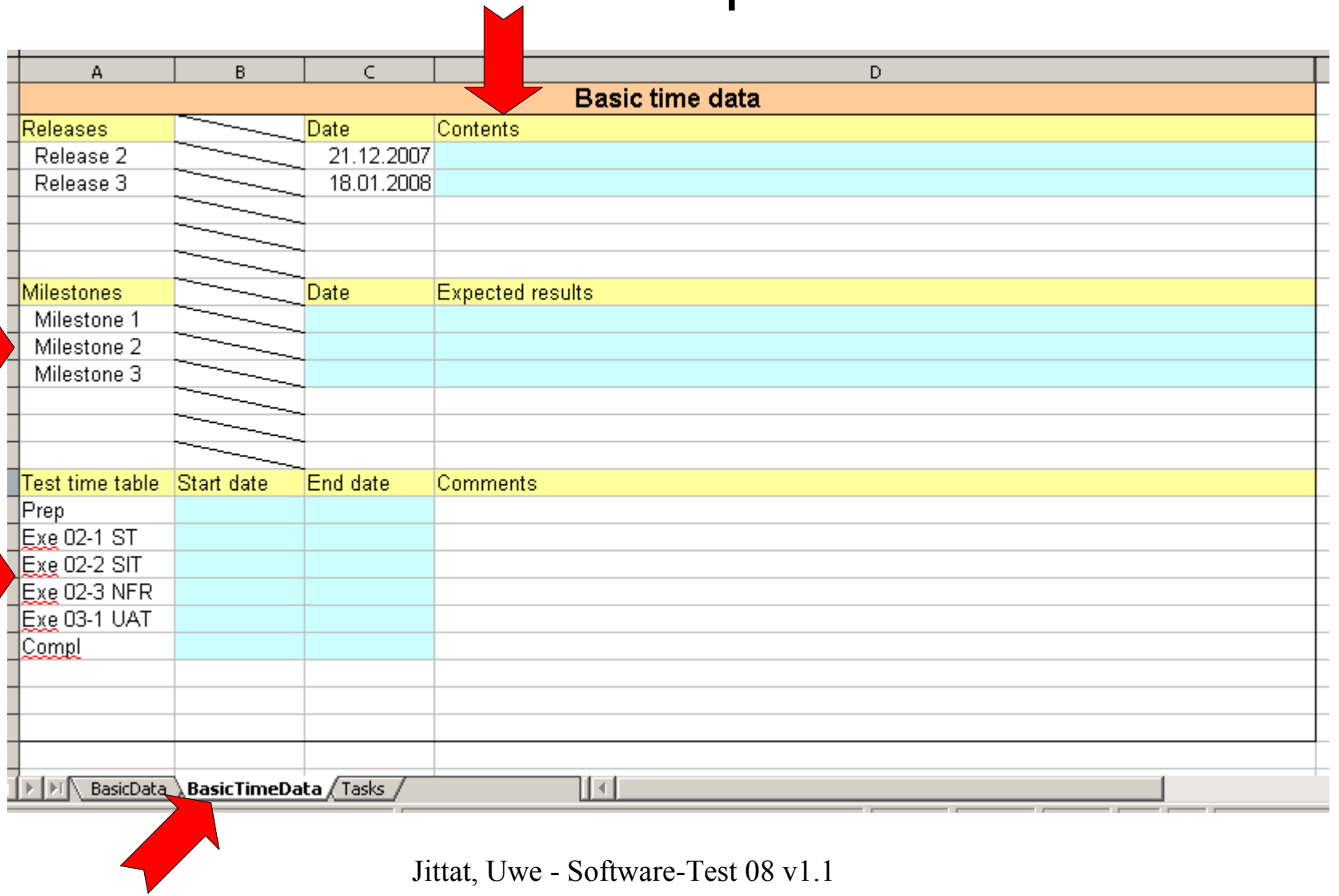
Test Planning Proceeding

4. Allocate resources



Test Planning Proceeding

5. Plan milestones with expected results



A	B	C	D
			Basic time data
Releases		Date	Contents
Release 2		21.12.2007	
Release 3		18.01.2008	
Milestones		Date	Expected results
Milestone 1			
Milestone 2			
Milestone 3			
Test time table	Start date	End date	Comments
Prep			
Exe 02-1 ST			
Exe 02-2 SIT			
Exe 02-3 NFR			
Exe 03-1 UAT			
Compl			

BasicData | BasicTimeData | Tasks

Test Planning Proceeding

5. Plan milestones with expected results

- Releases should contain all planned releases, versions, and fixes
  - “Contents” should describe in each case headlines of delivery
  - Information out of “Contents” should be found in release notes as well

Test Planning Proceeding

5. Plan milestones with expected results

- Milestones
  - "Expected results" should contain headlines of working results of each working group
  - Test Preparation Milestones
    - Could depend on Review Workshops, specific number of Test Cases (50 %, 100 %), all Test Cases are initialized, all Test Cases reviewed, Test Scenarios finished, ...
  - Test Execution Milestones
    - Should follow the releases
    - Intermediate Milestones if helpful

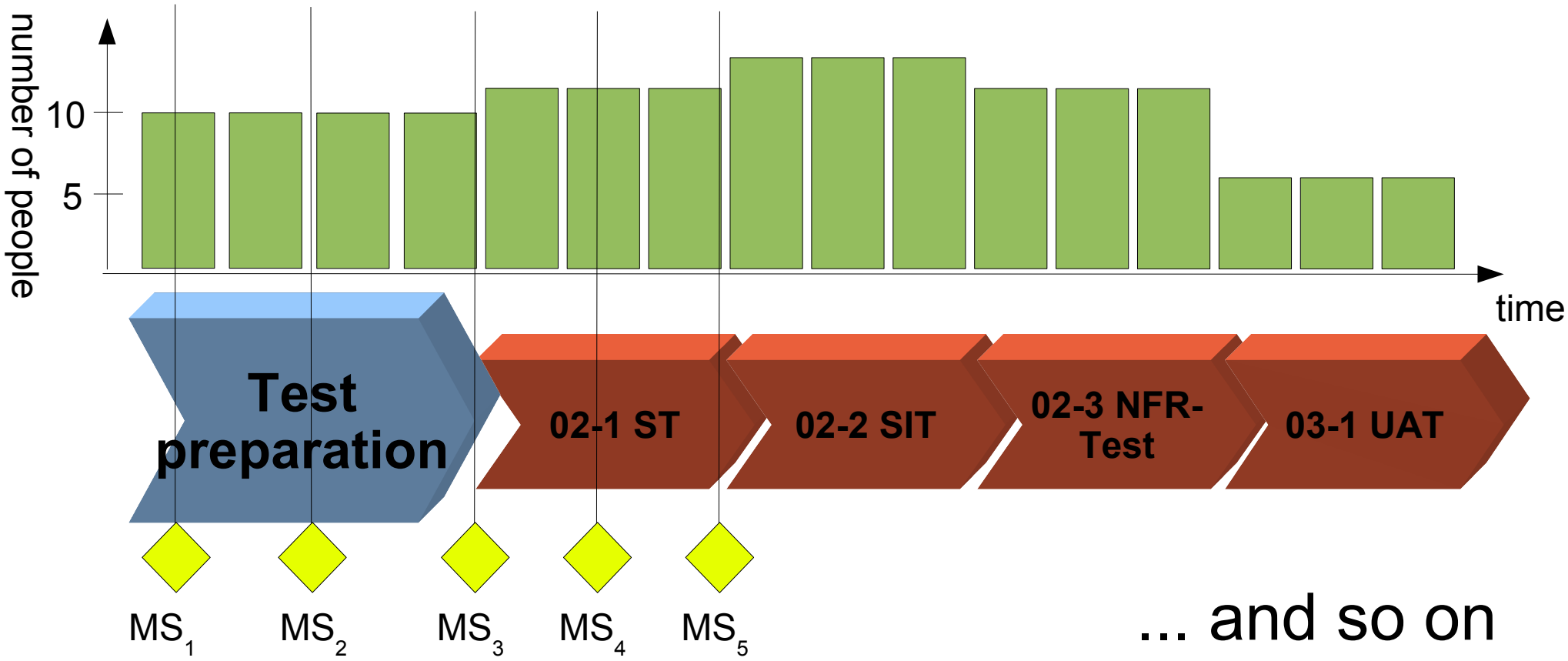
Test Planning Proceeding

5. Plan milestones with expected results

- Test time table
  - Close connection to milestones
  - Each Testing circle should have
    - Entrance criteria
    - Exit criteria
  - It must be clear, who is responsible to finish a test circle (should have defined acceptance criteria as well)

Test Planning Proceeding

5. Plan milestones with expected results, Example



Test Planning Proceeding

5. Plan milestones with expected results, Example

- Preparation Milestone 1 MS_1
  - Testers are trained
  - Test tool is running
- Preparation Milestone 2 MS_2
  - 50 % of Test Cases created
  - review workshop done
  - rework started
  - 50 % of Test Scenarios created ...

... and so on

Test Planning Proceeding

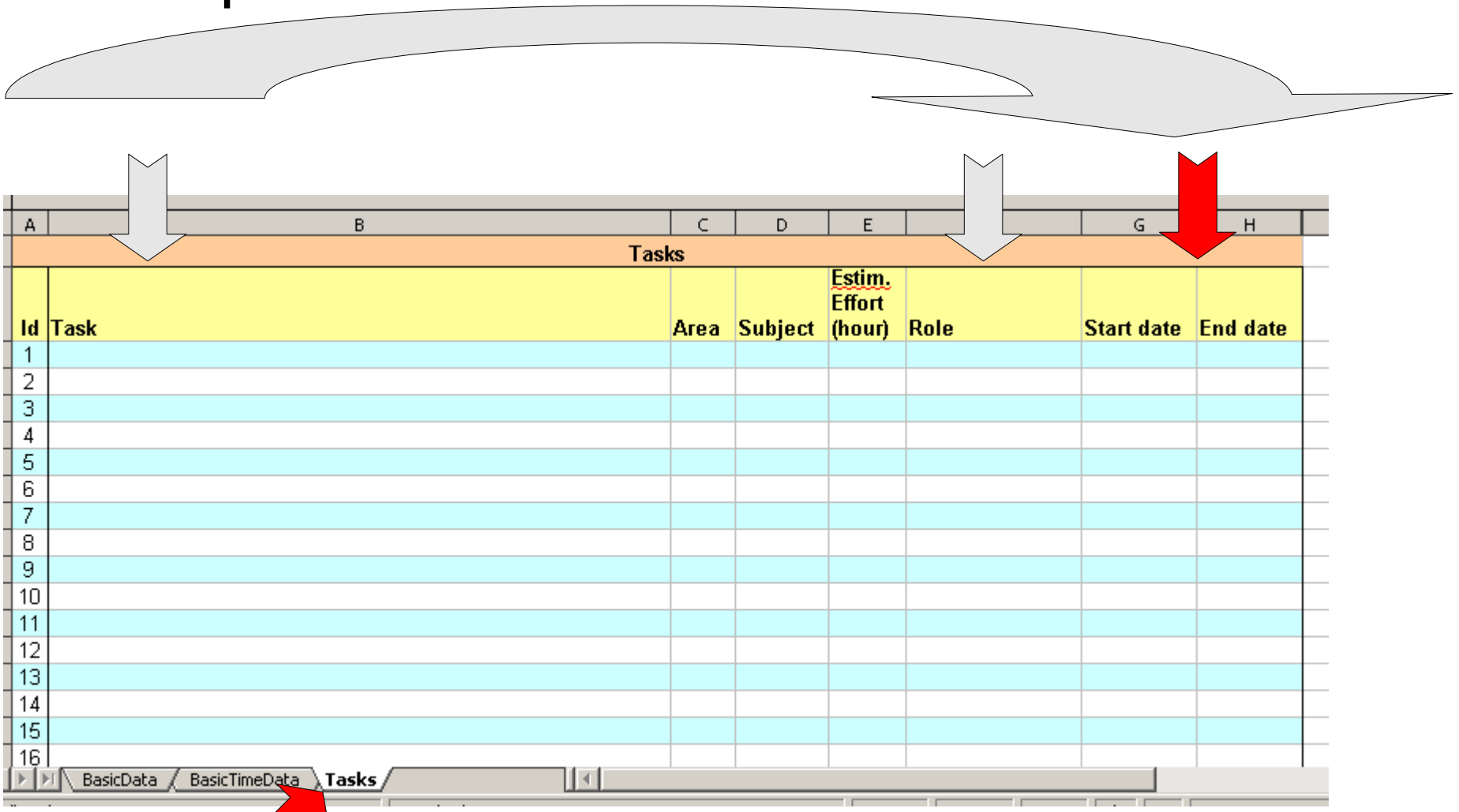
5. Plan milestones with expected results, Example

- Execution Milestone 1 MS_4
  - Entrance criteria fulfilled
  - Smoke test successfully
- Execution Milestone 2 MS_5
  - Test Coverage achieved
  - Test results reported
  - Exit criteria fulfilled

... and so on

Test Planning Proceeding

6. Plan sequences of tasks

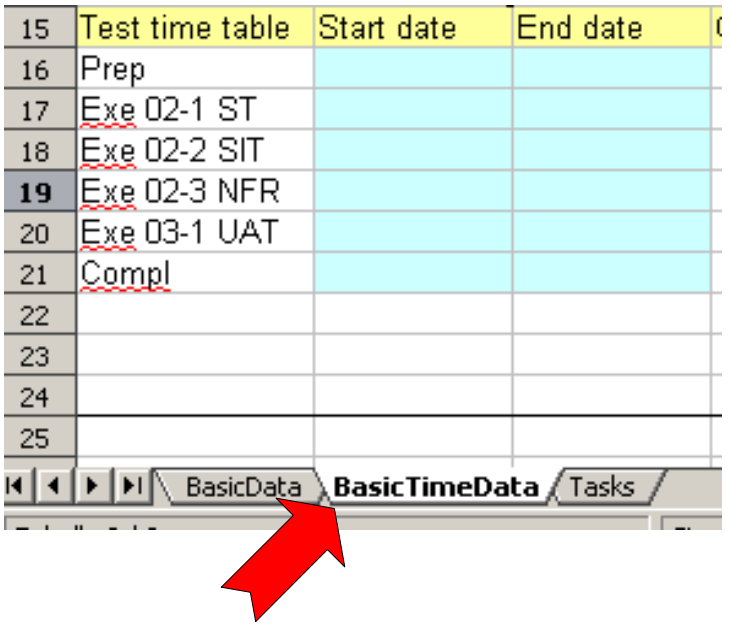


Test Planning Proceeding

6. Plan sequences of tasks

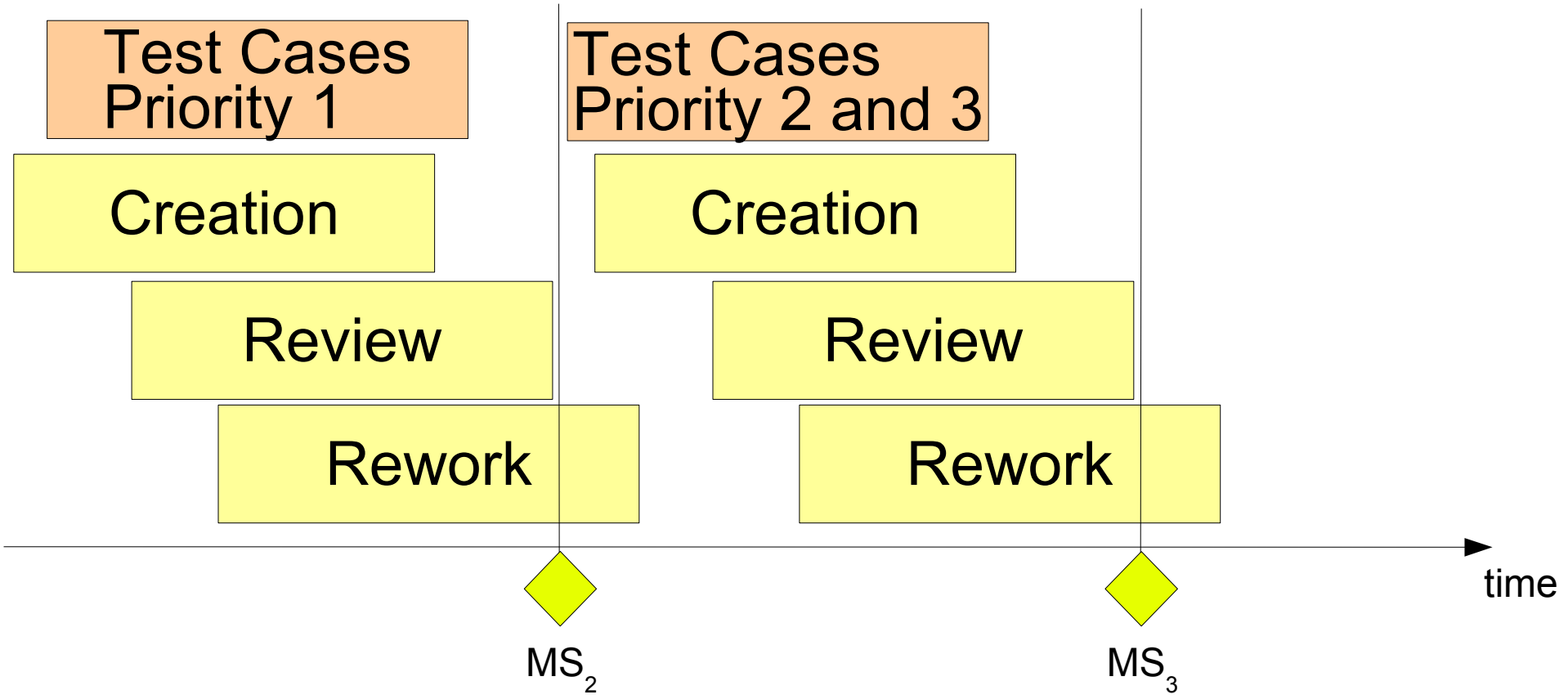
- Start date and End date should follow
  - Milestones and / or
  - Test time table

out of BasicTimeData



Test Planning Proceeding

6. Plan sequences of tasks



... and so on

Test Planning Proceeding

- Result: Time Schedule and Resource Plan
  - During plan development coordination with stakeholders
  - Finally: Decision about acceptance of the Test Plan
  - Basis plan to start
  - Plan has to be updated during the project
  - Could be used for tracking and controlling the Test Project
  - Very interesting at the end of testing for improving: How good was the estimation?

Test Planning Proceeding

- Example

NR.	Vorgangsname	Dauer	Anfang	Ende	Ressourcennamen	% Abgeschlossen
14	Test data in T1 environment	0 Tage	Do 31.08.06	Do 31.08.06		0%
15	Test data optimization	17 Tage	Do 31.08.06	Fr 22.09.06		0%
16	Test data in environment T1 finished	0 Tage	Fr 22.09.06	Fr 22.09.06		0%
17	**Test Case / Test Scenario Creation**	99 Tage	Di 09.05.06	Fr 22.09.06		3%
18	**Test case creation**	83 Tage	Di 09.05.06	Do 31.08.06		3%
19	Test case creation - Training week	5 Tage	Di 09.05.06	Mo 15.05.06		100%
20	TCC - Training on the job	5 Tage	Di 16.05.06	Mo 22.05.06		100%
21	**01_change control**	73 Tage	Di 23.05.06	Do 31.08.06		0%
22	Test case creation	49 Tage	Di 23.05.06	Fr 28.07.06		0%
23	Review and rework	25 Tage	Fr 28.07.06	Do 31.08.06		0%
24	**02_pl structure**	73 Tage	Di 23.05.06	Do 31.08.06		0%
25	Test case creation	49 Tage	Di 23.05.06	Fr 28.07.06		0%
26	Review and rework	25 Tage	Fr 28.07.06	Do 31.08.06		0%